



## **EXECUTIVE SUMMARY**

This management plan assists in the recovery of four endangered fish species as water depletions from the Yampa River Basin continue to serve human water needs in Colorado and Wyoming. The plan anticipates that depletions will increase to meet projected future human needs. In this plan, we quantify current depletions, as well as future depletions projected through 2045. The plan describes specific management actions to promote recovery of the listed species in the face of those depletions and criteria by which to measure the success of management actions.

The U.S. Fish and Wildlife Service (Service) lists the humpback chub (*Gila cypha*), bonytail (*G. elegans*) Colorado pikeminnow (*Ptychocheilus lucius*), and razorback sucker (*Xyrauchen texanus*) as endangered under the Endangered Species Act (ESA). Endemic to the Colorado River Basin, populations of these fishes had declined throughout their historic range due largely to habitat loss or degradation and introduction of competitive and predatory nonnative fish species.

The ESA requires that "recovery goals" be developed which provide "objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list" and that site-specific recovery measures be developed. Each of the endangered fish species can be downlisted and subsequently delisted when all of the species-specific recovery criteria have been met. Final recovery goals for these species were published in August 2002. These goals include both numerical population criteria and habitat criteria and specifically address five listing/delisting factors: (1) present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or manmade factors affecting its continued existence.

It is the policy of the Services to "[d]evelop cooperative approaches to threatened and endangered species conservation that restore, reconstruct, or rehabilitate the structure, distribution, connectivity and function upon which those listed species depend." Moreover, this policy requires the Services to "[d]evelop and implement agreements among multiple agencies that allow for sharing resources and decision making on recovery actions for wide-ranging species" (59 FR 34274; USFWS and NMFS 1994). Consistent with this intent, the Upper Colorado River Endangered Fish Recovery Implementation Program (Recovery Program) was established in 1988 with the goal of recovering the endangered fishes in the face of current and foreseeable future water depletions from the Upper Colorado River Basin. The Recovery Program developed and periodically updates a Recovery Action Plan that identifies specific measures to benefit the endangered fishes. These measures address the listing factors by providing and protecting instream flows, acquiring and managing habitat, constructing fish passage facilities, managing competitive and predatory nonnative fish, propagating and stocking endangered fishes into their historic habitats, and monitoring the status of endangered fish populations and their habitats.

The Yampa River is important to these endangered fishes, and the Service designated critical habitat for all four species within its lower reaches. Razorback sucker and Colorado pikeminnow spawn in the lower reaches of Yampa Canyon, which also harbors one of five remaining populations of humpback chub in the Upper Colorado River Basin. Peak flows are particularly important in creating and maintaining spawning habitats for the endangered fishes in the Yampa River, as well as nursery habitats for Colorado pikeminnow and razorback sucker in the Middle Green River downstream from the Yampa River confluence.

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This management plan is intended to offset impacts to the endangered fishes due to existing and certain new depletions from the Yampa River Basin in Colorado and Wyoming. It anticipates that new depletions would result from direct-flow diversions, small tributary reservoirs and/or modest expansion(s) of existing reservoir(s). Although the plan considers impacts to the Green River due to depletions from the Yampa River, it does not address impacts of depletions from the Green River mainstem or any of its tributaries other than the Yampa River. Total existing and future depletions, representing an estimated 15% of the average annual yield of the Yampa at its confluence with the Green River, are expected to have a modest impact on peak flows. The Recovery Program will implement management actions described below to offset depletive impacts to base flows, minimize impacts to peak flows, and reduce impacts due to competitive and predatory nonnative fishes.

To implement these actions, the U.S. Fish and Wildlife Service (Service) and the States of Colorado and Wyoming, as partners in the Recovery Program, intend to sign a Cooperative Agreement to implement the various elements of the plan. The Recovery Program will incorporate these elements in its Recovery Action Plan, establish schedules to initiate and complete recovery actions described herein, and fund and implement these actions, subject to appropriations, except as noted below.

The Service recommended that daily average base flows in the Yampa River not fall below 93 cubic feet per second (cfs) at Maybell from August through October at any greater frequency, magnitude or duration in the future than had occurred historically (Modde et al. 1999). Historical records show that base flows at Maybell occasionally have fallen below the 93-cfs flow target in July, as well. Therefore, the base-flow period was expanded to include July. Moreover, uncertainty with respect to the winter flow needs of the fishes prompted the Service to extend the base-flow period through the winter months (November-March) with a 33% buffer added to the 93-cfs flow target (i.e., 124 cfs) during this period, which is consistent with observed hydrologic patterns.

This plan proposes to augment base flows in accordance with these recommendations to compensate for impacts to base flows due to depletions. Hydrologic modeling demonstrated that 7,000 acre-feet (AF) would satisfy base-flow needs in all but the driest years. In developing this plan, 13 base-flow augmentation alternatives were identified and evaluated. Alternatives include both structural and non-structural options, which rely upon one <u>or more</u> of the following six potential sources:

- 1. Supply interruption contracts (3,700–7,000 AF)
- 2. Instream flow water rights (up to 7,000 AF)
- 3. Steamboat Lake (2,000–7,000 AF by lease)
- 4. Elkhead Reservoir (3,700–7,000 AF by lease, exchange and/or enlargement)
- 5. Stagecoach Reservoir (1,300–7,000 AF by lease, exchange and/or enlargement)
- 6. New tributary reservoir(s) (up to 1,300 AF total)

Structural alternatives include both single-source and multiple-source options. Each of 13 action alternatives was subjected to a preliminary feasibility analysis, using the following evaluation criteria: (1) ability to meet base-flow needs; (2) estimated cost; (3) impacts on Colorado State Parks and water-related recreation therein; (4) impacts on agriculture; (5) impacts on peak flows; and (5) legal and institutional constraints. Based on this analysis, an enlargement of Elkhead Reservoir provided the most reliable supply at a moderate cost, with minimal impacts to parks and water-related recreation, agriculture and peak flows. Steamboat Lake and Stagecoach Reservoir alternatives, as well as combinations with these reservoirs, were somewhat less reliable, and caused greater impacts to park and recreation and peak flows.

Among the non-structural options, supply interruption contracts provide greater <u>potential</u> reliability than instream flow water rights, because the latter would be junior to all prior water rights. However, supply interruption contracts face significant legal and institutional hurdles and, if adjudicated for instream use, that use may not enjoy the same seniority as the underlying irrigation right. Base-flow augmentation will not interfere in any way with Yampa Basin water users exercising their water rights.

Nonnative fishes adversely impact the endangered fishes and other native species by feeding upon and/or competing with them. Management actions herein include measures to reduce the impacts of sportfish such as northern pike, smallmouth bass and channel catfish, on the endangered fishes. Measures include screening reservoirs to prevent escapement of sportfish to the river, implementing stocking regulations to preclude stocking nonnative species to any water from which escapement to the river is likely, and active removal of nonnative fishes from the river. While some species may be lethally controlled in some river reaches, Yampa Basin residents desire to maintain healthy inbasin sport fisheries. Therefore, sport fish such as northern pike and smallmouth bass removed from the river will be placed in publicly accessible ponds and reservoirs, subject to availability, that are hydrologically isolated from the river, screened or otherwise modified to preclude escapement.

The Recovery Program will identify and evaluate high-priority flooded bottomland habitats along the Middle Green River between Ouray and Jensen, Utah, acquire an interest in the best habitats, and improve their habitat value by removing levees to allow spring floods to inundate floodplain depressions, overflow channels, backwaters and oxbows, which serve as nursery habitats for Yampa/Green river populations of razorback sucker and Colorado pikeminnow.

The Recovery Program has determined that existing diversion structures within critical habitat on the Yampa River (Echo Park to Craig, Colorado) do not impede passage of Colorado pikeminnow during their seasonal migrations. These diversions are upstream from reaches utilized by razorback sucker and humpback chub. The Recovery Program will develop guidelines to ensure that any new diversion structures and dams accommodate fish passage and to reduce impacts of maintaining diversion structures within critical habitat. The Recovery Program also will determine whether Colorado pikeminnow enter and become stranded by existing Yampa River diversions by sampling ditches after the irrigation season. If Colorado pikeminnow are found stranded in any of the ditches, the Recovery Program will implement measures, such as installing screens near ditch intakes, to reduce or eliminate such incidental take due to existing structures.

The Recovery Program developed the following genetic management goals for endangered fishes: (1) prevent immediate extinction; (2) conserve genetic diversity through recovery efforts to establish viable wild stocks by removing or significantly reducing factors that caused the population declines; (3) maintain the genetic diversity of captive-reared fish; and (4) produce genetically diverse fish for augmentation efforts. Supplemental stocking of the Middle Green/Lower Yampa razorback sucker population is a high priority of the Recovery Program. Restoring bonytail populations in Lodore Canyon (Green River) and Echo Park (Yampa River) through stocking also is a high priority.

Separate performance criteria will be developed for each of the management actions described in this plan to 1) ensure that they are implemented in a timely manner, 2) evaluate their effectiveness in accomplishing their stated objectives, and 3) determine if and to what extent they contribute to the recovery of the endangered fishes. Monitoring also will be necessary to determine how well the endangered fishes are doing, and assess their prospects for recovery. The Recovery Program will ascertain the status of endangered fish populations at 5-year intervals. Based on the results of

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monitoring, the Recovery Program will re-evaluate the effectiveness of its recovery actions and may modify those actions (i.e., using adaptive management) as it deems necessary and appropriate. The Recovery Program will implement any modifications or additions to its recovery actions and bear any costs resulting therefrom. The Service intends to review the status of the listed fishes at least once every 5 years, based on species' population point estimates and trend data provided by the Recovery Program, to determine if these species should be "downlisted" from endangered to threatened status or "delisted" (i.e., removed from the list). Recovery goals for each of the four endangered fish species state that recovery will be achieved "when management actions and associated tasks....have been implemented and/or completed to allow genetically and demographically viable, self-sustaining populations to thrive under minimal ongoing management and investment of resources." Genetic and demographic viability criteria which must be met for each species are identified in their respective recovery goals.

The Service intends to enter into a cooperative agreement with the states of Colorado and Wyoming for the purpose of implementing this plan. To comply with ESA requirements for this federal action, the Service will initiate an intra-Service Section 7 consultation. The expected product of this consultation will be a programmatic biological opinion (PBO) for the Yampa River Basin that will determine whether implementation of this plan along with the impacts of existing and foreseeable future depletions are likely to jeopardize threatened and endangered species or adversely modify their designated critical habitats.

The PBO also is expected to address incidental take for certain activities not covered under previous biological opinions, because these activities either predate the ESA or were otherwise exempted from ESA section 7 consultation requirements (e.g., non-federal actions). The PBO will quantify anticipated levels of incidental take and specify reasonable and prudent measures (RPM) and Terms and Conditions which, if implemented, would minimize or preclude such take. Full compliance with the RPM would exempt these activities from the take prohibitions of ESA section 9.

